

ABSTRACT

Disclosed is a method for forming a shallow trench in a deep trench structure. The method of the present invention comprises steps of forming a liner layer on the deep trench structure; forming an amorphous silicon layer on the liner layer; implanting selected ions to a region of the amorphous silicon layer at a part of the deep trench; oxidizing the amorphous silicon layer to form an oxide layer, wherein the thickness of a portion of the oxide layer formed at the region of the amorphous silicon layer implanted with the selected ions is different from the thickness of a portion of the oxide layer formed at the region of the amorphous silicon layer not implanted with the selected ions; partially removing the oxide layer so that the thin portion of the oxide layer is removed and the thick portion of the oxide layer partially remains as a residual oxide layer; removing the portion of the liner layer not covered by the oxide layer to expose the poly-silicon therebelow; and etching the exposed poly-silicon to form a shallow trench.